No. XVIII.

OBSTETRICAL INSTRUMENTS.

The LARGE GOLD MEDAL *of the Society was presented to J. P.* HOLMES, *Esq. Surgeon,* 21, *Old Fish Street, Doctors' Commons, for his improved Obstetrical Instruments.*

21, *Old Fish Street,*
April 5, 1828.

THE necessity that existed for simplifying the numerous instruments that were in use among obstetric practitioners, struck me forcibly twenty-three years since, when I was in practice abroad. During the time I have followed my profession in London, I have very anxiously pursued this subject; I have tried many expensive experiments, and have sedulously employed myself in discovering the deficiencies of the old instruments. In this investigation I have made use of the suggestion of a numerous class of professional friends, who have candidly stated the difficulties they had personally experienced in the use of the same. It is now some time since I have finished my improvements; and having had the satisfaction of using my instruments with much success in my own practice, and of having the most favourable accounts of them from my friends, I have laid them before the Society.

I shall now proceed to describe, in a brief manner, the improvements I have effected in each instrument.

The first instrument I offer is a pair of forceps. For-

ceps are instruments made to embrace the head of the child just as a man's hand would do; and they are only substituted for these because there is never room for the introduction of so thick a substance as the hand by the side of the head, and because they cannot lay hold with sufficient firmness. It follows, then, as a main principle in the construction of forceps, that the part that represents the hand should be made as thin as possible compatible with strength; secondly, that they should take a firm hold. Now, the second indication, I am free to confess, almost all the forceps in present use fulfil: they lay hold firm enough; but, as to the first point, they are all thicker than they need be; they consequently encroach on that cavity which is already too small for the passage of the child. In my instruments I have been enabled, by diminishing the fenestra, to render the blades much thinner than ordinary, and thus have gained one great desideratum. But then there is another point. In all the common forceps hitherto used, it has been assumed, that the child's head being of a globular form, the blades of the instrument must be curved not only in the direction of their axis, but from side to side. Now, I deny this assumption. A child's head out of the body is globular; but when passing the pelvis, and still more when it is under the pressure of forceps, the head is so flattened that its rotundity is nothing. Hence (and this is the fact) the bevelled edges press into the child's head; and by pulling down, that is, extracting, the scalp is sometimes excoriated, but always more or less marked.

There are cases in which no common forceps can be safely or effectually applied—cases where we are obliged to perforate the head of the child, destroy the brain, and remove the child. For these purposes two instruments

have been in use; one a perforator, and one to draw down the deceased child, either entire or in fragments. The perforator in common use is a very dangerous instrument; for it is sharp-pointed and cutting both ways; and hence, if care be not taken to guard it in its passage to the child's head, or if it should slip when arrived there, it cuts the soft parts of the mother, and most probably destroys her. The following are the specific objections to this instrument, as commonly made:—First, its perforating point is curved, which is about as sensible an arrangement as if, previously to driving a nail into a board, we were to turn its point round; secondly, the point is formed of the two blades united; but as no instrument can be made so true but that its points may bend, or its joints, these two points are never really together; thirdly, when these instruments have been introduced, they have to be opened in order to make an incision. And how are they opened? In the same way as a pair of scissors, the most feeble and ineffectual; the consequence of which is, that, as our power is feeble, we must always be violent. Great exertion is required to open the blades; one slips out, and, perhance, cuts the woman. Now, these inconveniences I have thus obviated. I have straightened the point of the instruments, because it will thus perforate easily without much force, and to a certainty without slipping. I have made my point on one blade only, that it may always remain fit for use. By turning the handles across, I have subjected them to that firm, steady, and manageable power of grasping which the hand possesses, instead of leaving them to be worked by the feeble and tottering movement of the thumb and fingers.

The instrument, which is used to withdraw the child

after the head has been perforated, consists of a pair of blades, one of which is inserted into the child's head, whilst the other is on its sides; and one of these is furnished with sharp teeth, shutting into holes in the other. These instruments were a great improvement on the old blunt hook; but they were apt to slip from their hold, partly on account of the smallness of the teeth, and partly on account of the length of the blades and shortness of the handles, by which their leverage was much weakened.

Dr. Conquest endeavoured to obviate this inconvenience by uniting the handles; but, in so doing, he united them by a hinge that, without extraordinary care, may cut and nip the soft parts of the mother, producing great pain and danger. Moreover, he diminished the teeth, already too small to perforate the bone, and consequently, his forceps continually slipped away with portions of the scalp, leaving the bone bare.

I have united the blades by a joint that will not admit the smallest particle of matter to get into its interstices. I have enlarged the teeth so that they will perfectly transfix and retain hold on the firmest bow, and I have effectually guarded them from any contact with the soft parts of the mother. My instrument is also more massive than those in use, because I consider the strength of the instrument enables us to use our power more gently and effectually. There appears to be no greater error than to fancy that, with weak and flexible instruments, we avoid using great force: they slip, yield, and though we may exert no power, we are sure to exert violence. Now, such an instrument as I have invented allows us to abstain from using great muscular exertion to keep it closed, and very slight drawing downwards enables us to use much force; our efforts may be perfectly regulated; we

are sure to make our traction in a right direction: in a word, we have a full command of our operation.

These instruments are available in all cases where it is decided upon to extract the child dead. If there is such a diminution of the pelvis only, that the body will pass when the head is evacuated of the brain, they will bring forth entire. If the cavity be so small that this cannot take place, they will break down the body into small portions, and remove it piecemeal. If there occur cases where the smallness of the pelvis will not admit these instruments to be applied, I am bold to say no instruments hitherto invented can be used. We must then have recourse to that terrible alternative — the Cæsarian operation. Such cases, however, though they are on record, probably may not occur again for centuries—perhaps never: for the instrument I am now about to introduce will, if used in time, prevent the necessity of this cruel operation.

It has long been established by enlightened practitioners, that when a woman is so deformed that she cannot bear a child without the Cæsarian section, and she is discovered to be pregnant, abortion should be brought on. This is to be effected by puncturing the membranes that contain the child. Now, the instrument in use is a common stilet; but the operation is so difficult, that it is very rash to use a bare-pointed instrument in performing it. The mouth of the uterus is not easily discovered, and when it is discovered, is so far closed that it is difficult to avoid wounding its lips; and, while we are examining with the finger, be it remembered, this pointed stilet is left unguarded. I have obviated this difficulty, simply by turning the stilet into a trocar. I pass a canula, perfectly smooth and innocuous, into the vagina; find the

mouth of the uterus with my finger; introduce it into that opening; and now I know I am safe. I press a bolt, which drives a trocar out of the end of the canula, penetrates the membranes, and retracts itself the instant my finger is withdrawn. The liquor amnii follows, and labour ensues.

This instrument may also be advantageously applied to puncture the membranes in ordinary cases of labour, when they are very firm and unyielding.

I am, Sir, &c. &c.

A. Aikin, Esq.
Secretary, &c. &c.

John Pocock Holmes.

Reference to the Engraving, Plate I.

Fig. 1 represents a perforator for opening the head when too large for delivery. While in the act of perforating the hand is placed between the handles *a b*, and grasps the portions *c d*, by which the handles *a b* are kept distended: this keeps the ends *e* and *f* closed together, forming a sharp spear-pointed perforator; the end *e* only is formed into a sharp point, the other *f* fitting in so as to complete the two cutting edges; the top of *f* is notched, as shewn in the separated blades, fig. 11, to fit the angle at *e*; it is thereby kept from springing or straining the joint while using it as a drill; then, when by frequent turning it has pierced the cranium, and entered to the shoulders *g g*, the handles *a b* are closed, as shewn by dotted lines: this action opens the perforating points *e* and *f*, as shewn by dotted lines, their sharp edges making incisions on each side of the perforation; it then is grasped again at *c d*, to close the points, which then

are to be thrust through the opening, and after breaking down the contents, it is withdrawn. The craniotomy forceps, fig. 2, is then to be introduced, while closed, till the point of the concave blade *h* reaches the perforation: it is purposely made longest, that it may slide over the outside, while the convex blade *i* begins to open and enter the perforation: this blade *i* is furnished with three chisel-shaped teeth *jjj;* they enter, while closed, three corresponding holes *kkk* in the opposite blade. They are better seen in fig. 3, which shews the inner faces of the blades *h* and *i;* smaller pointed teeth are also fixed in the blade *h*, with small corresponding holes in the blade *i;* these secure the external integuments, while the three chisel-like teeth pass through the bone of the head, and enter the perforations in the blade *h*, thus giving a very secure hold, and the head may be extracted without any danger of its slipping away; the joints of these forceps are turned and halved into each other, so that they form a round mass, and therefore, in opening or closing, cannot pinch or injure the soft parts near them. Fig. 4 represents a pair of bow-forceps; fig. 5 an outside view of one of the blades separate: these are used for aiding a delivery without injury to mother or child, where the natural power is not sufficient. Fig. 6 represents a perforating stilet, for the purpose of avoiding the use of the perforator fig. 1, and forceps fig. 2, in cases of known deformity: it consists of a long hollow tube and handle, slightly curved at the end *l;* within this slides a jointed stilet, shewn separate in fig. 7; a spiral spring *m* is placed at the lower end, which, acting against a shoulder within the handle, keeps the stilet down safe within its sheath: *n* and *o* are the two joints which allow it to slide in the curve at *l;* a slit is made in the tube at *p*, fig. 8, in which

traverses the screw *q*, which is fixed in the stilet: this both keeps it in the tube, and limits the motion: a button *r* at the bottom serves to press up the stilet, and protrudes its sharp point *s*, to make a puncture; then, on removing the thumb, the spring *m* immediately draws it within the sheath. Fig. 9 is an end view of the perforating points of fig. 1; and fig. 10 a section of the blade, fig. 5.

CERTIFICATES.

2, *Guilford Street, Russell Square,*
April 24, 1827.

SIR,

I have examined with much care the instruments which you have invented, and am decidedly of opinion that they are far superior to those in ordinary use. Your alterations in the perforator have contributed to make that instrument much more effectual, safer, and of easier application, than it has been heretofore. Your improvements in the other instruments will, I have no doubt, be allowed by every body practically acquainted with the subject of midwifery, to be highly important. The simple inspection of these instruments must convince any practical accoucheur of their safety and utility; but I am happy in being able to add the results of experience to the deductions of theory. I have used the perforator and craniotomy forceps on *two* occasions, with a degree of success that very much gratified me. Your common forceps I have applied *once*, and am perfectly convinced that they are the best instruments of the kind (numerous as the varieties of common forceps are) that have been invented.

I am, &c. &c.

GEO. SHIPMAN,
Lecturer on Midwifery at the School of Anatomy, Hatton Garden.

SIR, 8, *Hatton Garden, April* 12, 1827.

I have much pleasure in expressing the favourable opinion I entertain of your improvements in obstetrical instruments. In the *perforator*, especially, you appear to me to have shewn us that you possess two important qualifications which are rarely united — great mechanical ingenuity in the construction of the instrument, and a minute practical acquaintance with all the anatomical and physiological details of the parts that are the subjects of obstetrical operation.

I am, &c. &c.

J. P. HOLMES, Esq. F. G. JONES.

SIR, 3, *Nottingham Place, March* 5, 1828.

The obstetric craniotomy forceps and perforator which you requested me to use, answered quite to my satisfaction, and were far superior to those which I possessed, invented by Dr. D. Davis. Your perforator being straight, having *one point* only, and the dividing edges opening upon a different principle to other perforators, give it a decided superiority.

I have much pleasure in stating, also, that the forceps retain their hold much better than any which I have used formerly.

I am, &c. &c.

J. P. HOLMES. Esq. J. CHOLMONDELY.

SIR, *St. Saviour's, Southwark, March* 6, 1828.

Your obstetric instruments, consisting of the craniotomy forceps, the perforator, the perforating stilet, and the bow-forceps, I have inspected, and consider the

instruments to be simple, effectual, and, in prudent hands, safe.

The craniotomy forceps I have had occasion to use; and though they are large and heavy, my opinion is, that they constitute one of the best instruments for their purpose which has yet fallen under my notice.

I am, Sir, &c. &c.

J. P. Holmes, Esq. James Blundell.